FUNDAMENTALS OF AGRICULTURAL SCIENCE AND BUSINESS

5056

CIP Code: 01.0101

Fundamentals of Agricultural Science and Business is a year long course that is highly recommended as a prerequisite and foundation for all other agricultural classes. The nature of this course is to provide students with an introduction to the fundamentals of agricultural science and business. Topics to be covered include: animal science, plant and soil science. food science, horticultural science, farm and agribusiness management, landscape management, natural resources management, agricultural mechanization, and supervised agricultural experience which includes units on career and leadership development. An activity and project based approach is used along with team building to enhance the effectiveness of the student learning activities.

Four-year career plans and personal and career portfolios should be developed, reviewed regularly, and upgraded, utilizing a local school counselor and other school and community persons or resources.

- Suggested Grade Levels: 9 or by permission of the teacher
- Recommended Prerequisite: None
- A two credit/two semester course.
- A Core 40 directed elective as part of a technical career area.
- This course qualifies as an Academic Honors Diploma elective.
- Competencies and learning activities defined.
- This course is included as a component of the Agriculture and Natural Resources career cluster and may also be included as a component of the Engineering, Science, and Technologies career cluster.

Fundamentals of Agricultural Science and Business

A. Students shall examine the scope of career opportunities in and the importance of agriculture to the economy.

1. Discuss agriculture and agribusiness and their role in the economy.
2. Evaluate the career opportunities in and the criteria to achieve in order to satisfy the requirements for an agriculture production occupation.
3. Evaluate the career opportunities in and the criteria to achieve in order to satisfy the requirements for an agriculture supplies and services occupation.
4. Evaluate the career opportunities in and the criteria to achieve in order to satisfy the requirements for an agriculture mechanization occupation.
5. Evaluate the career opportunities in and the criteria to achieve in order to satisfy the requirements for an agriculture processing and marketing occupation.
6. Evaluate the career opportunities in and the criteria to achieve in order to satisfy the requirements for an ornamental horticulture occupation.
7. Evaluate the career opportunities in and the criteria to achieve in order to satisfy the requirements for a forestry and natural resources occupation.
8. Compare and contrast the opportunities in agricultural production and non-traditional/non-production employment.
9. Describe the role that agriculture plays in determining the overall economic situation of the American economy.
10. Describe the international impact of agriculture on the world economy.

B. Students shall acquire and practice leadership skills.

1. Summarize the characteristics of a leader.
2. Explain the significance of effective leadership in agriculture.
3. Describe the divers opportunities for developing leadership skills in the FFA.
4. Acquire, or refine previously acquired, communication skills such as writing, public speaking, and listening.
5. Demonstrate expertise in the areas of leadership, employability, communications and human relations.
6. Discuss the role of the FFA in the development of leadership, education, employability, communications and human relations skills.
7. Understand the process of setting goals and develop a comprehensive set of attainable goals.

8. Explain the role of the Indiana Young Farmers in the further development of leadership, education, employability, communications, and human relations skills.
9. Exhibit proficiency in the proper usage of parliamentary procedure.

C. Students shall investigate the necessity and identify the procedures for developing a Supervised Agricultural Experience Program (SAEP)

1. Explain the nature of and become familiar with those terms related to an SAE program.
2. Justify the purposes for instituting an SAEP.
3. Identify the numerous possibilities for an SAE program which a student might develop.
4. Identify the opportunities for an SAE within the local community.
5. Begin the implementation of an SAE program suited to the requirements of the student.

D. Students shall investigate the necessity and pertinence of plant and soil science as a component of agriculture.

1. Examine and develop a presentation to explain the basic principles in crop production.
2. Given a group of different species of plants, categorize them by utilizing a taxonomic key.
3. Differentiate between sexual and asexual plant reproduction.
4. Develop a list of plants which distinguishes the differences between asexual and sexual reproduction.
5. Describe the process of photosynthesis and explain how it affects the environment.
6. Devise an experiment which will illustrate how soil type and pH affect plant growth. Predict and verify the results.
7. Develop a presentation which will illustrate the role of plants in the basic food chain and their effects on the surrounding environment.
8. Analyze the importance of the relationship between plant life and air quality.
9. Given the life cycle of a plant develop a scenario that explains the importance of each stage.
10. Identify the basic parts of a plant and their functions.
11. Utilizing knowledge gained through previous exercises illustrate the major agricultural uses for land and soil in Indiana.

E. Students shall recognize the importance of preserving and replenishing our natural resources through natural resource management.

1. Identify and define the terms associated with natural resource management.

2. Explain the characteristics of resources in agricultural development.
3. Evaluate the various types of natural resources.
4. Given the past and current relationship between wildlife and humans predict the changes which are likely to occur.
5. Explain the effect that natural resource management has on the quality of our environment.
6. Describe the interrelationship between agriculture and the environment.
7. Develop and implement a project that involves the improvement of our environment.
8. Describe the necessity and importance of conserving natural resources.
9. Identify the major factors causing soil erosion and create a scenario in which no attempt is made to control these factors.
10. Develop a demonstration to illustrate the effects of soil erosion.
11. Identify the methods for conserving water. Predict which method, or methods, would be most effective locally.

F. Students shall investigate the necessity and pertinence of horticulture and landscape management as a component of agriculture.

1. Identify and define the terms associated with horticulture and landscape management.
2. Compare and contrast the various methods of plant propagation. Prepare a demonstration illustrating one of these methods.
3. Generate a list of plants which are propagated by each of the different methods of plant propagation.
4. Evaluate the use of indoor plants and how they affect the air quality and indoor environment.
5. Propagate plants utilizing each of the various methods of plant propagation.
6. Discuss the popular theories on the growth and development of turfgrass.
7. Explain how trees and shrubs are used for outdoor landscaping, improved air quality and pollution control.
8. Develop and implement a model landscape design.
9. Discuss the basic requirements needed to plan a garden or orchard.
10. Identify and explain the elements of a successful lawn care program in the local area.

G. Students shall investigate the necessity for and importance of the modern animal science industry.

1. Recognize and define the terms associated with the animal science industry.

2. Given information about the essential elements needed for growth successfully identify common nutritional deficiencies.
3. Develop a program that illustrates the basic skills necessary for proper animal care.
4. Devise an experiment which utilizes the basic principles of genetics.
5. Discuss the different types of breeding systems and the reasons for their implementation in given situations.
6. Prepare a presentation which illustrates the uses, care and management of small animals.
7. Illustrate the uses, care and management of the various breeds of horses.
8. Describe the similarities and differences in the uses, care and management of dairy, beef, swine, sheep, and other types of livestock.
9. Demonstrate the process involved in marketing animals and animal by-products.
10. Describe the responsibilities of the animal industry regarding animal care and welfare.
11. Given the life cycle of an animal develop a scenario that explains the importance of each stage.
12. Describe the role and importance of animals to society.

H. Students shall investigate the basic economic principles which are used in agribusiness and farm management.

1. Identify and define the terms associated with agribusiness and farm management.
2. Identify the factors involved in proper management and discuss their importance.
3. Illustrate and explain the eight steps involved in decision-making.
4. Compare and contrast the different forms of agricultural record systems.

I. Students shall investigate the necessity and pertinence of the various aspects of the food science industry.

1. Identify and define the terms associated with the food science industry.
2. Identify the major food groups that are presently recognized and discuss the changes made as nutritional requirements have been altered.
3. Describe the interrelationship between food quality and inspection standards.
4. Utilize knowledge to explain biotechnology and predict possible future developments.

J. Students shall develop and demonstrate a basic knowledge of agricultural mechanics and physical science.

1. Recognize and define the terms associated with agricultural mechanics.
2. Complete a project which utilizes the basic principles of plumbing.

3. Complete a project which utilizes the basic principles of electricity.
4. Complete a project which utilizes the basic principles of structural design.
5. Demonstrate a familiarity with irrigation and water structures.
6. Demonstrate the principles of small engine systems.
7. Identify and illustrate the uses for common power and hand tools.
8. Explain the need for safety in agricultural mechanics and physical science.
9. Demonstrate proper safety procedures to follow in the various areas associated with agricultural mechanics.